Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_

**Biology Study Guide: Photosynthesis and Cellular Respiration**

**Photosynthesis (Ch. 8)**

What is the equation?

Molecular:

Words:

What are the reactants (what is needed)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What are the products (what is made)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Occurs in which types of organisms? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Occurs in which organelle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What does this organelle look like? Be able to identify and draw.

What is the function of pigments?

What is chlorophyll? What is its function?

Why do leaves change color in the autumn?

How is photosynthesis connected to cellular respiration? Be sure to use the terms: reactants and products.

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**Cellular Respiration (Ch. 8)**

What is the equation?

Molecular:

Words:

What are the reactants (what is needed)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What are the products (what is made)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Occurs in which types of organisms? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Occurs in which organelle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What does this organelle look like? Be able to identify and draw.

How is cellular respiration connected to photosynthesis? Be sure to use the terms: reactants and products.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Labs**

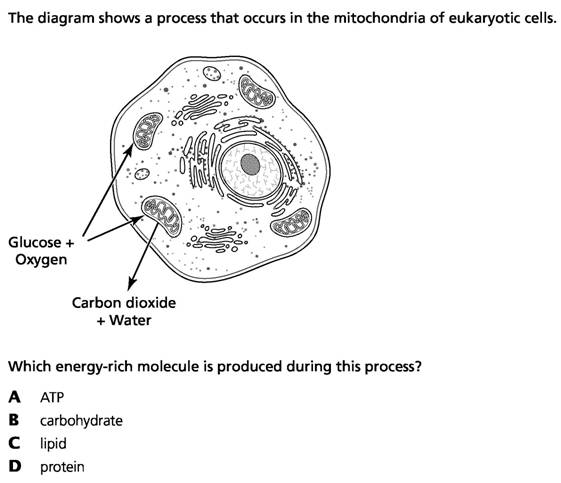
*Floating spinach disk lab*

1. What was the independent variable?
2. Baking soda was in the detergent/water solution to be a source of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is needed for photosynthesis.
3. What was the dependent variable?
4. Why were no leaves expected to float in the control (no CO2) cups?

*Growing ryegrass*

1. What was the independent variable for your experiment?
2. What was the dependent variable for your experiment?
3. What were the constants for your experiment?

**SAMPLE QUESTIONS**

1. The processes of photosynthesis and cellular respiration both involve the conversion of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The original source of energy for most living things is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is used to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is then converted into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the cell energy “currency.”
2. Plants and algae need \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for photosynthesis. Photosynthesis produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which become the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of cellular respiration.
3. What process is shown in the picture to the left? How

do you know?

1. What energy molecule is produced through this process?
2. Who is the “odd man out”? Explain why using SCIENTIFIC rationale.
   1. Mitochondria, O2, CO2, Glucose
   2. Glucose, chlorophyll, H2O, ATP
3. For the following scenario identify the variables and constants.

*David is curious if the amount of sleep he gets affects his grades. He decides that he will exercise every day and eat the same meals. On Sunday night he sleeps nine hours, eight on Mon. seven on Tues., etc.*

* 1. Independent variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Dependent variable:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. Constants:

1. Decide if each of the following statements are true or false? Provide rationale for your answer.

Example

Statement: Plants create ATP by performing photosynthesis.

Possible response 1: *False. Plants create ATP by performing cellular respiration.*

Possible response 2. *False. Plants create glucose and oxygen by performing photosynthesis.*

Possible response 2: *True. Although ATP is not directly created during photosynthesis plants*

*convert the glucose and oxygen created during photosynthesis into*

*ATP during cellular respiration.*

* 1. Plants are green because they absorb green wavelengths of light.

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* 1. Plants do not create carbon dioxide.

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1. Draw a picture depicting (showing) the movement and cycling of light (energy), CO2, O2, H2O, glucose (energy), ATP (energy) in an ecosystem. Be sure to include the sun, and at least one plant and one animal in your diagram.